

## SECTION 801 HIGHWAY LIGHTING, SIGNALS, AND SIGNING-ELECTRICAL

### 801.01. DESCRIPTION.

This work consists of furnishing all labor, equipment, appliances, and materials, and performing all operations in connection with the installation of

- highway lighting systems
- traffic signal systems, or
- *highway sign lighting systems*

in accordance with these Specifications and the Plans, or as established by the Engineer.

All electrical work shall conform to the requirements of the National Electric Code (NEC) except where superseded by these Specifications.

**The highway lighting system** shall be complete with all necessary accessories for proper operation. Transformers, disconnecting devices, protective devices, luminaires, and all other equipment shall be coordinated to secure the required result.

**The traffic signal system** shall be complete with all necessary accessories for proper operation. Controllers, signal heads, detectors, push buttons, synchronizing devices, time clocks, and all other equipment shall be coordinated to secure the required result.

**The highway sign lighting system** shall be complete with all accessories, including the sign lights either permanently connected to power or left in such condition as the Plans indicate ready for future connection to power.

### 801.02. MATERIALS.

Within 30 days after receiving notice to proceed, submit five copies of a complete schedule of materials and equipment proposed for installation to the Engineer for review and approval. Include catalog cuts, diagrams, drawings, and such other descriptive data as may be necessary to satisfy the Engineer that the requirements of the Specifications will be met.

Upon completion of the work on traffic signal systems, deliver the manufacturer's instruction manual for the maintenance, timing, and operation of all traffic control equipment to the Engineer.

Also furnish a complete wiring diagram of the signal system and components—and a parts list sufficient for the ordering of any part of the equipment furnished—with each controller.

*NOTE: Where galvanizing on hardware is specified, it shall comply with AASHTO M 232, Class C coating.*

The electrical and mechanical equipment furnished and used shall be new, standard, manufactured products. All units of the same class of equipment shall be products of a single manufacturer.

Supply guarantees and warranties as specified in Subsection 106.12.

**801.04. CONSTRUCTION METHODS.**

The locations of the electrical energy supply shown on the Plans are approximate only. Exact locations will be determined in the field.

- (a) **Connections.** Make the necessary arrangements with the serving utility to complete the service connections. The connection to the primary system will be made by others.

The highway lighting electrical energy supply and circuits will be as follows, unless otherwise specified: 60 cycle, 480 volt, single phase. Also, they must be multi-grounded neutral for multiple connection of luminaires, with automatic photoelectric control to turn the highway lights on at dusk and off at dawn. The 480-volt lighting circuits must each be supplied from a primary system through a distribution transformer and control equipment.

The traffic signal electrical energy supply and circuits will be 60-cycle, single-phase, 120-volt power, unless otherwise specified.

The highway sign lighting electrical energy supply and ballasts will be 60-cycle, single-phase, 480-volt power.

- (b) **Bonding and Grounding.** Secure conduit, poles, and cabinets mechanically and electrically to form a continuous system, and effectively ground them.

Bond and ground jumpers using at least No. 10 AWG copper wire or better for all systems.

Ground poles using at least No. 8 AWG copper wire or better, securely attached to the pole and the ground rod, as shown on the Plans.

At each service location, use grounding conductors of conduit and neutral that are at least No. 6 AWG copper wire.

- (c) **Existing Traffic Signal Equipment Removal.** Remove all existing traffic signal equipment and store it at a site designated by either the owner or the Engineer.

Remove such equipment with as little damage as possible.

Remove poles wholly; cut anchor bolts, protruding conduit, and the like flush with the final ground level.

Remove wiring from underground conduit.

Leave footings, pull boxes, and underground conduit in place.

Include labor and equipment costs necessary to complete such removal in the contract unit price for other items unless otherwise provided for on the Plans.

Do not remove normally existing signal equipment or make it wholly inoperative until the 24-hour test period of the new equipment has been completed satisfactorily and the new system is approved for continued use.

- (d) **Covering of Signal Indications.** Before putting new signal equipment into operation, completely cover the new signal heads with an all-weather bag—with the exception of pedestrian WALK-DON'T WALK indications.

*NOTE: At no time shall the new system and existing system be visible to traffic at the same time.*

- (e) **Testing.** Test equipment in accordance with Section 805.